



Southeast [USA] Deep-Sea Coral Research and Technology Program (SE-DSC) 2009 - 2011



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Introduction In 2009, the United States National Oceanic and Atmospheric Administration (NOAA) began the Deep Sea Coral Research and Technology Program, dedicated to providing the scientific information needed to conserve and manage deep-sea coral ecosystems. That year, a three-year mapping and research effort began, focused on the deep-sea coral ecosystems of the Southeast U.S. This region was selected for initial field operations based on the importance of its deep-sea coral habitats and the opportunity for the research to inform major conservation efforts. The region contains the most extensive and well developed deep-sea stony coral reefs in U.S. waters, and an abundance of other coral habitats (e.g., octocoral, black, stylasterid and gold corals).

Mapping and ROV/Sub Support Vessels



R/V Seward Johnson



NOAA Ship Nancy Foster



R/V Lost Coast Explorer



NOAA Ship Ronald H. Brown



NOAA Ship Pisces

Major Accomplishments Seven research cruises used multibeam sonar to map over 10,000 km² of habitat along the outer continental shelf and slope between South Carolina and southern Florida, and conducted 22 submersible and 36 ROV dives. These surveys discovered the region's shallowest *Lophelia pertusa*, bioherms and documented 75 unprotected and previously unknown mounds of the reef-forming *Oculina varicosa*. The videos, photos, and over 1,000 biological samples collected over these three years are undergoing analysis. NOAA and its partners are quantifying the abundance of fishes and invertebrates living in deep-sea coral communities, identifying the species encountered, estimating coral ages and growth rates, and using genetic markers to understand coral population structure. Several range extensions for fishes and invertebrates have been identified and several possible new crustacean species were collected. The multibeam maps and groundtruthing video are helping to parameterize a new predictive coral habitat map.

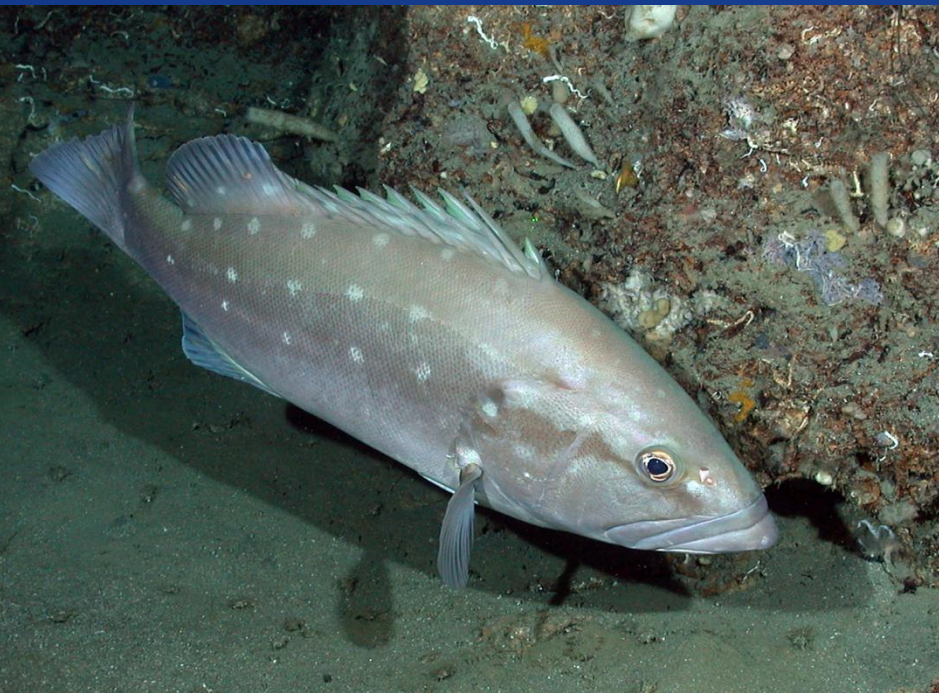
Noteworthy Vertebrates and Mobile Invertebrates



Caribbean Roughshark - *Oxynotus caribbaeus*



Golden Crab - *Chaceon fenneri*



Snowy Grouper - *Epinephelus niveatus*



Bladefin Basslet - *Jeboehlkia gladifer*

Research Partners

U.S. Federal Government

- NOAA Office of Oceanic and Atmospheric Research
- NOAA Office of Marine and Aviation Operations
- NOAA National Ocean Service
- NOAA National Marine Fisheries Service
- South Atlantic Fishery Management Council
- U.S. Geological Survey
- Bureau of Ocean Energy Management

Non-Governmental Organizations (NGOs)

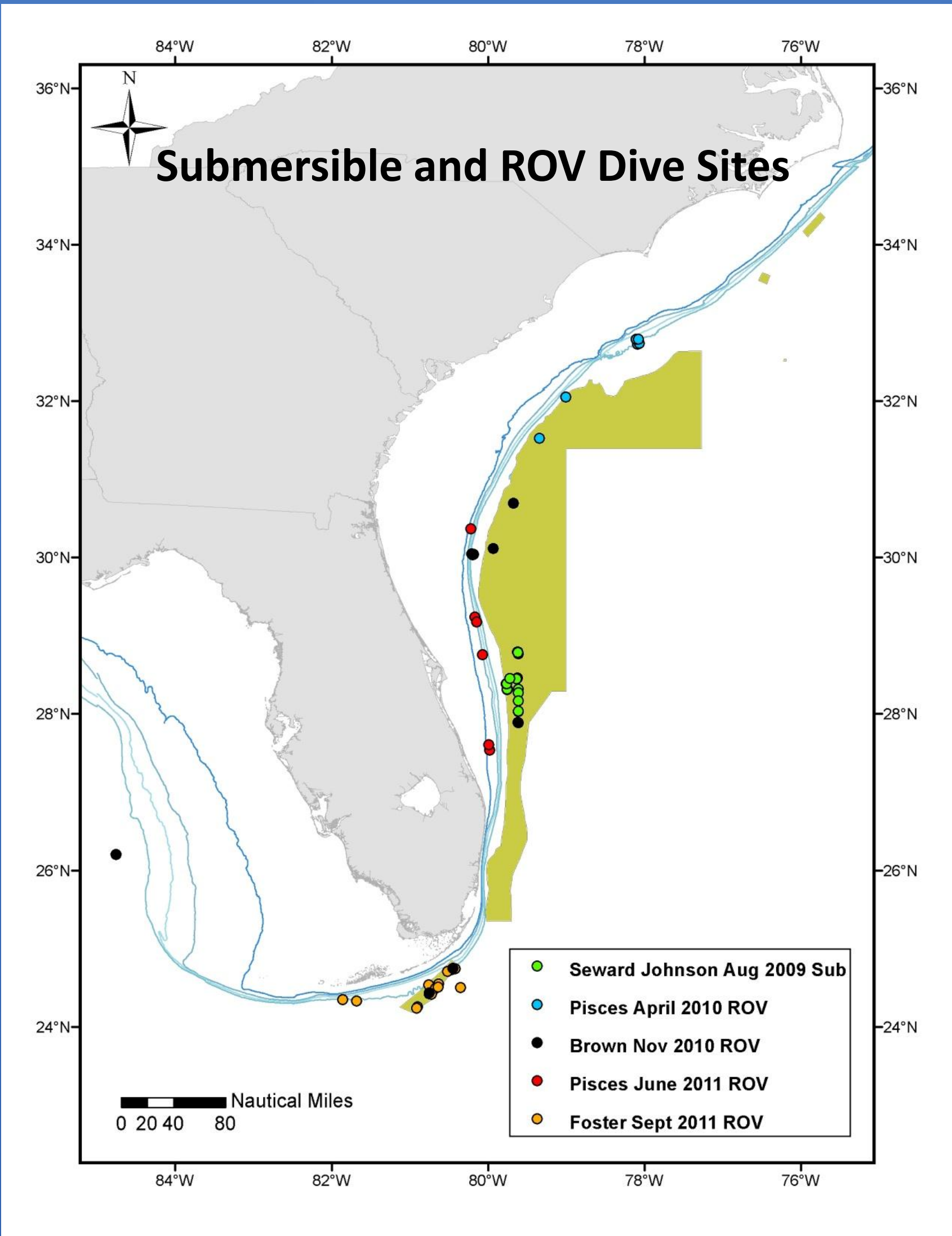
- Marine Conservation Biology Institute
- Harbor Branch Oceanographic Institution

U.S. Academic

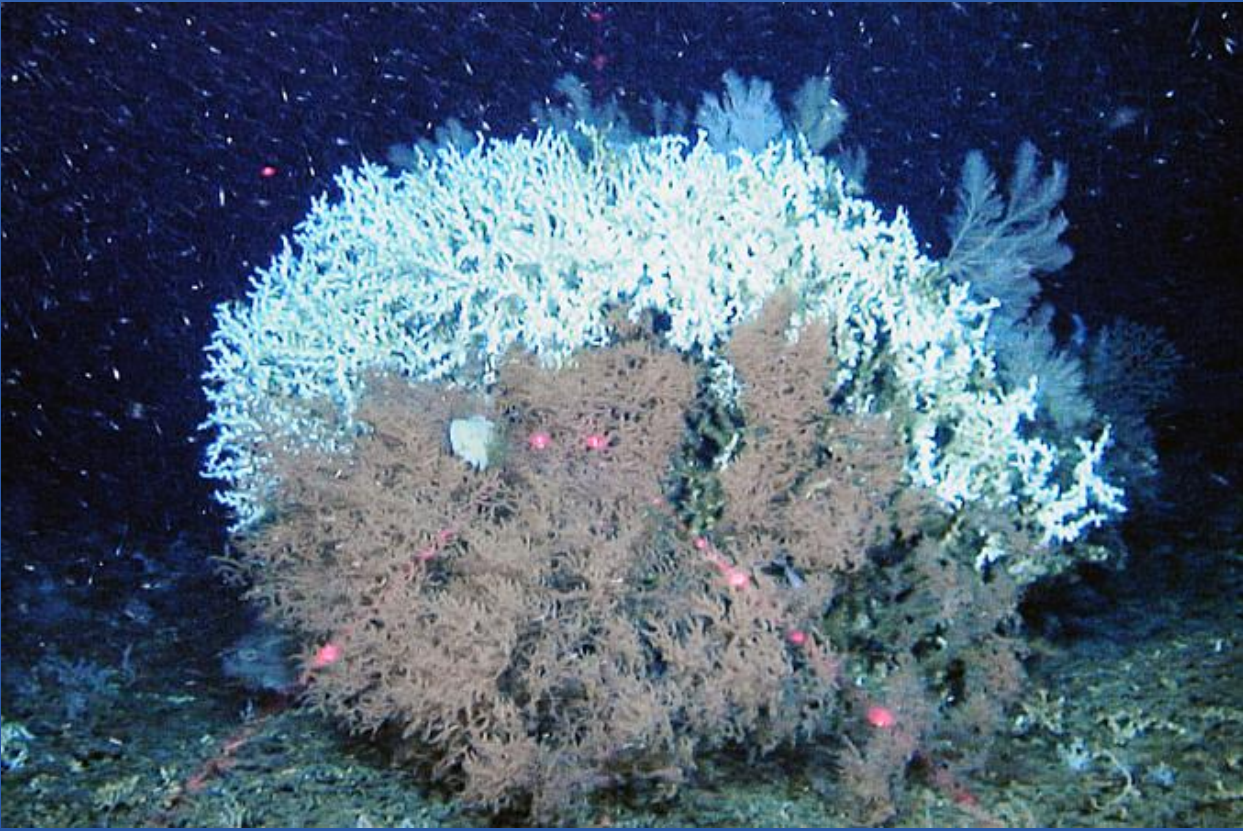
- College of Charleston
- Florida Atlantic University
- Nova Southeastern University
- Oregon Institute of Marine Biology
- Texas A&M University
- University of Alabama
- University of Connecticut
- University of Louisiana – Lafayette
- University of North Carolina at Wilmington
- University of South Florida

International

- Scottish Association for Marine Science
- Royal Netherlands Institute for Sea Research



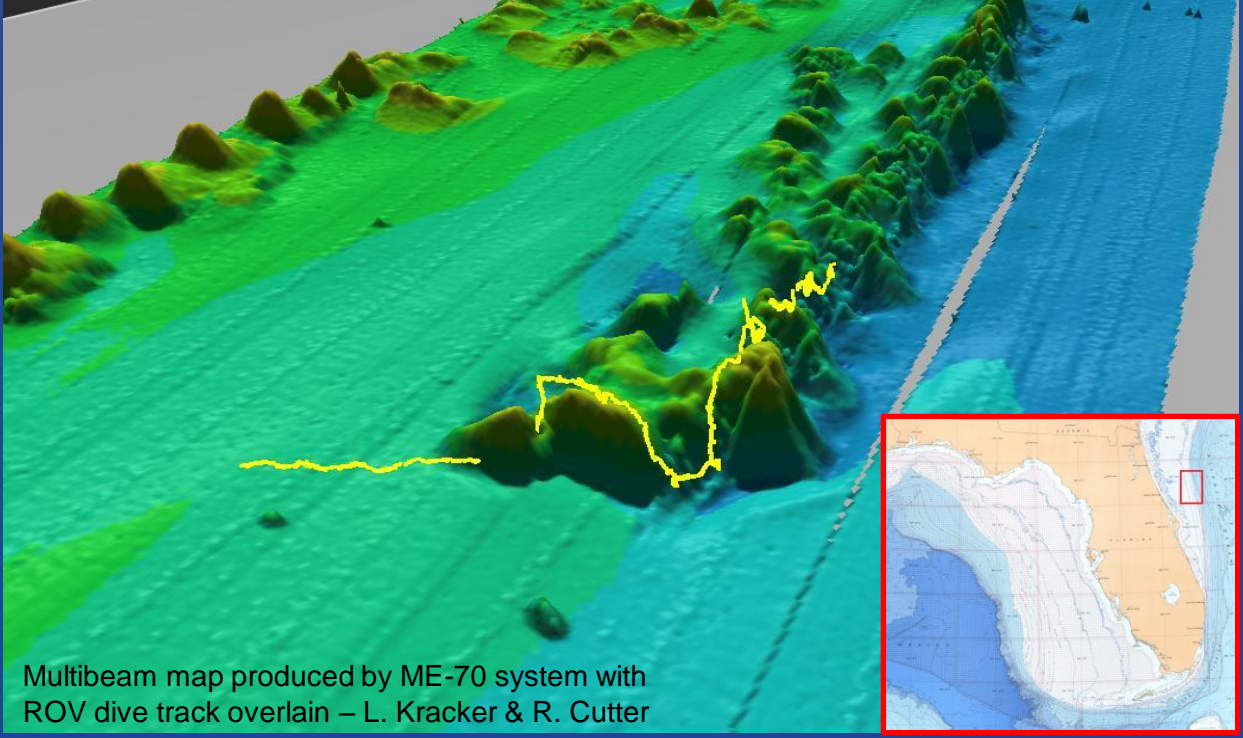
Significant Discoveries



Southernmost *Lophelia* in US - Pourtales Terrace



Shallowest *Lophelia* in US - northeast Florida (205m)



Over 75 new *Oculina* mounds off eastern Florida

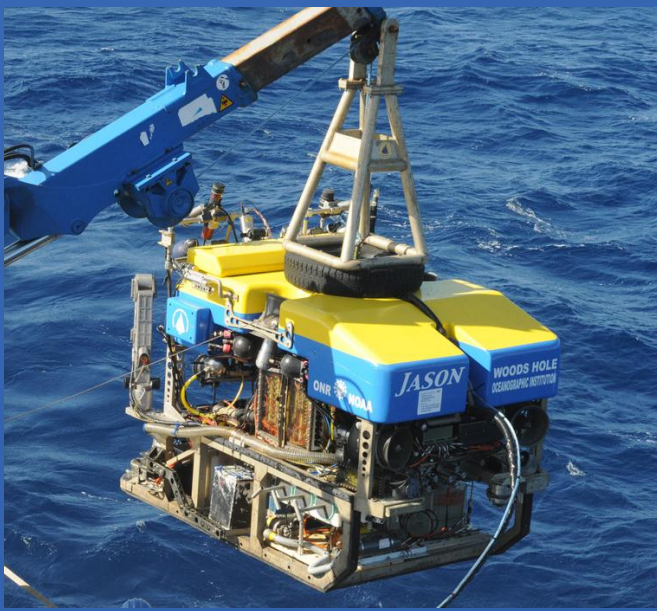


Optimizing research team along with surface and subsurface platforms, with major input from managers and national funding support led to highly successful program.

Program Synopsis

- 7 Major cruises
 - (2 mapping only)
 - (2 ROV/Sub only)
 - (3 ROV & mapping)
- 22 Submersible dives
- 36 ROV dives
- 10,100 km² mapped

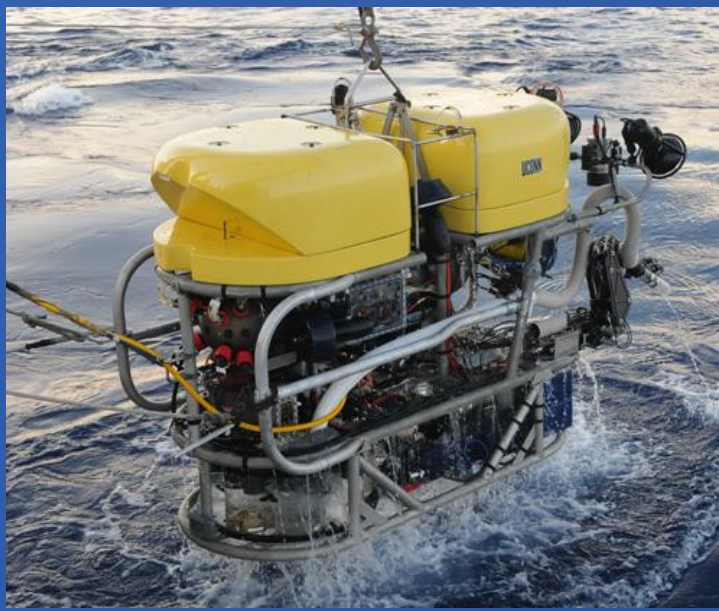
ROVs and Submersible



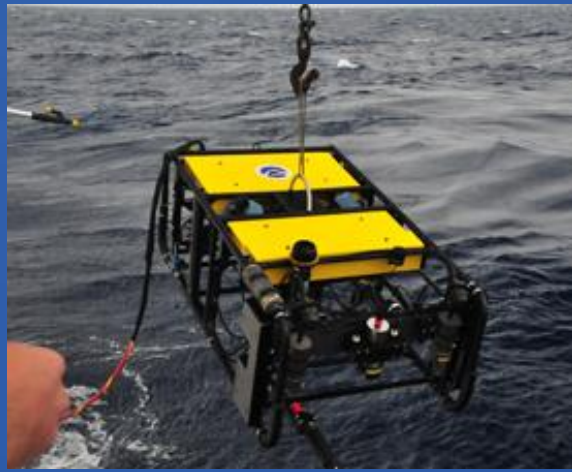
Jason II ROV (WHOI)



Johnson Sea-Link Submersible (HBOI/CIOERT)



Kraken II ROV (UConn)

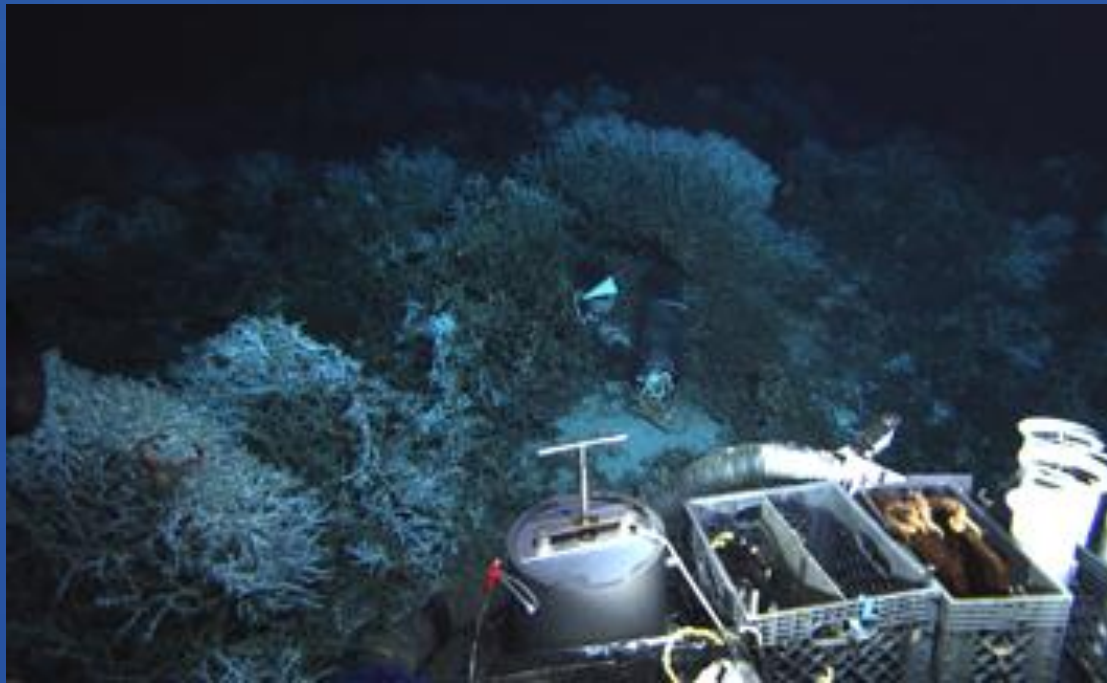


ARC HDHV ROV (SWFSC)



Phantom ROV (SWFSC)

Noteworthy Deep-Sea Corals and Sessile Invertebrates



Lophelia pertusa



Stylaster sp.



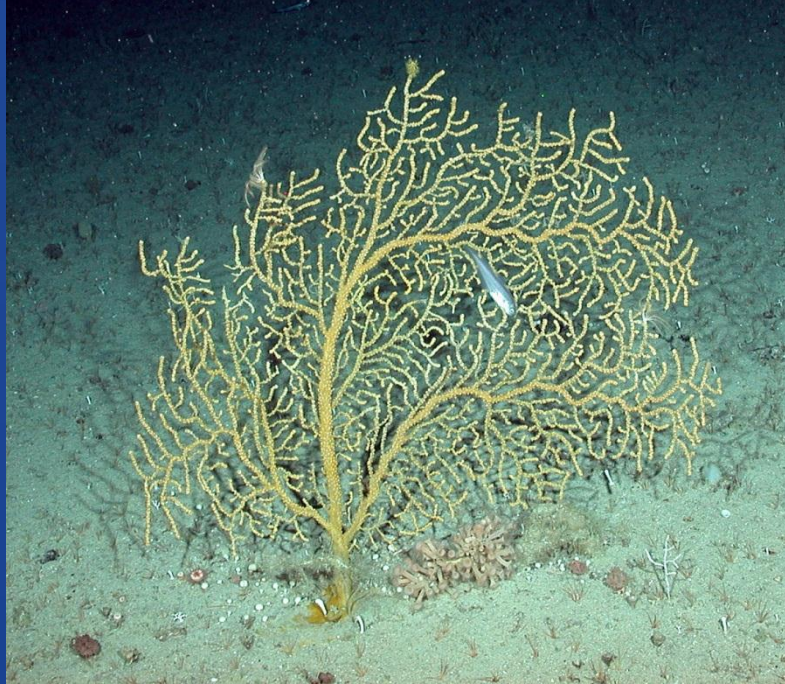
Oculina varicosa



Venus Flytrap Anemones and Crinoid



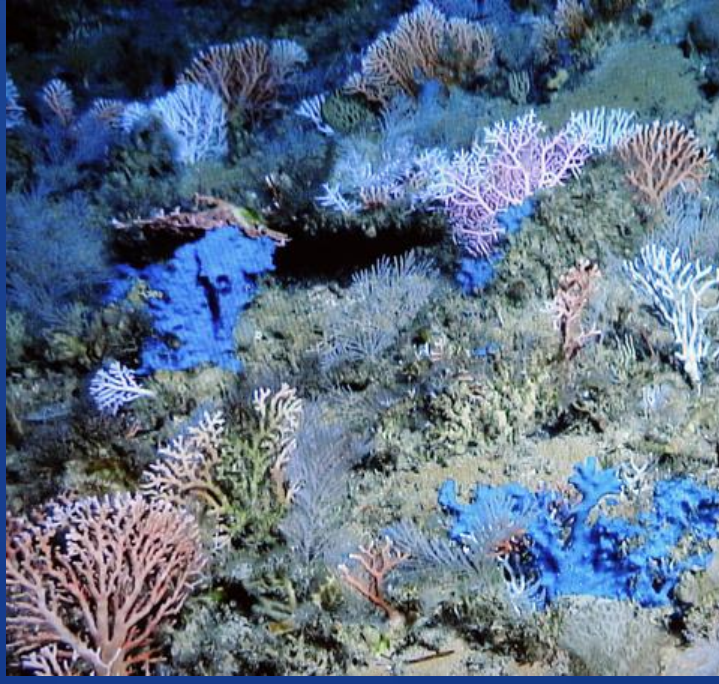
Pitcher Sponge - Petrosiidae



Placogorgia sp.

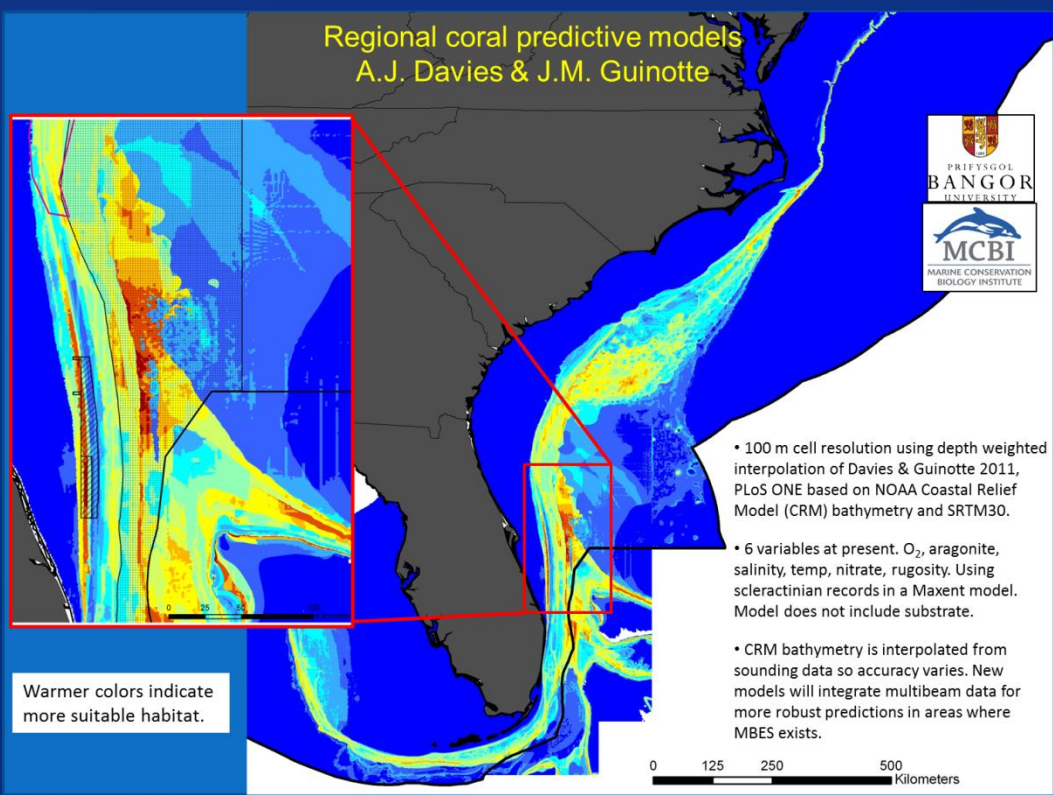


Leiopathes sp.

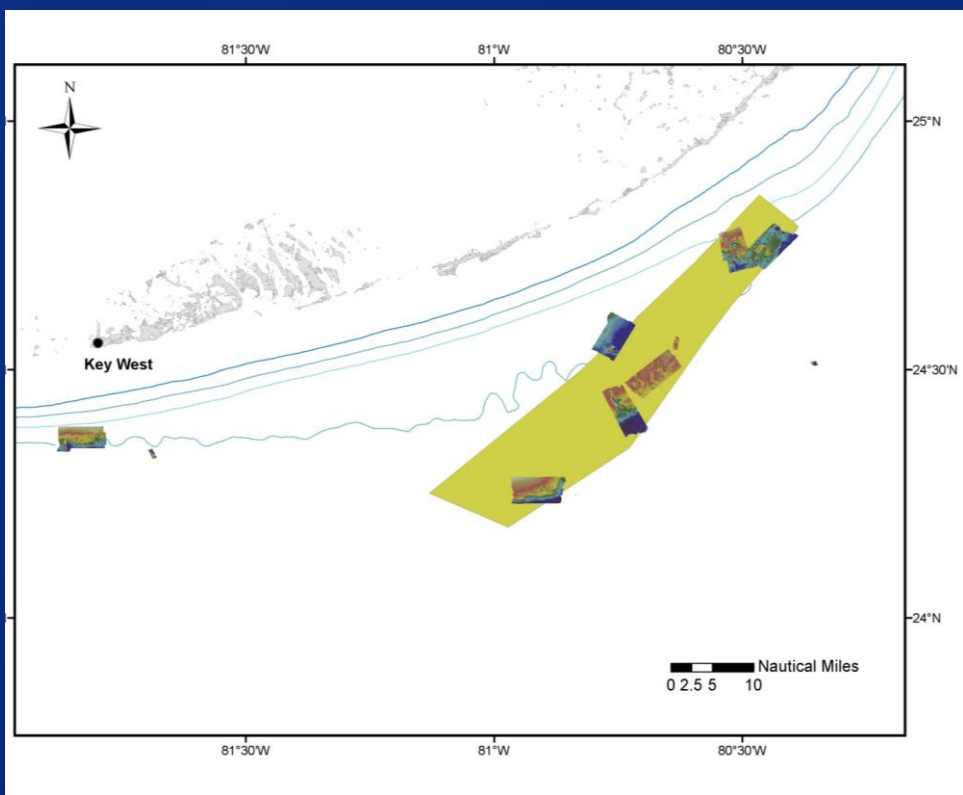


Stylaster sp. with blue encrusting sponge

Management Implications NOAA manages fisheries in the federal waters of the region through fishery management plans developed by the South Atlantic Fishery Management Council. The Council has established five deepwater Coral Habitat Areas of Particular Concern, encompassing more than 60,000 km² where the use of all bottom-damaging fishing gear is prohibited. The Council was an integral partner in developing the Program's research objectives, which targeted priority habitats in and near the protected areas. Initial results have been provided to the Council, which has begun a public process to review additional management measures to protect the newly discovered deep-sea coral habitats.



Predictive Deep Coral Map



Multibeam data within existing CHAPC